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Bairoch Revisited. Tariff Structure and Growth in the Late 19th Century

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Abstract
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Keywords: Tariffs and Growth, Tariff Structure, Late 19th Century.
JEL Classification: F13 ; N70

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Bairoch Revisited. Tariff Structure and Growth in the Late 19th Century*.

Antonio Tena-Junguito (Universidad Carlos III)

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1.- Introduction

The analysis of the economic impact of commercial policies is certainly not easy and this is also clearly the case for any attempt to isolate one factor among the complex mix of factors playing a role in economic development. Many economic historians have supported the idea that protection was instrumental to the development of continental Europe during the late 19th century. Bairoch's (1976, 1989, 1993) hypothesis that tariffs were positively associated with growth is related mainly with European countries but it has also been extended to other high-tariff land abundant countries like the rich European offshoots[1].

Recent econometric studies carried out by O´Rourke (2000) and Jacks (2006) tend to confirm Bairoch's propositions regarding the positive correlation between tariffs and growth in the late 19th century. Both works take a limited sample of 10 countries, mostly rich European or land abundant countries with good institutions. Williamson et al, (Clements-Williamson (2002, 2004), in a more ambitious study, which includes a larger sample of countries, has shown that a significantly different correlation between tariff average and growth for poor and rich countries exists, even in Europe and also according to the political independence of the territories tested as was the case with the Asiatic and African colonies in the late 19th century. Other criticisms of this position were made by Irwin (2002 a, b,), who insisted on the fiscal determination of the high-tariff land abundant countries and Tena (2005, 2006) who notes the influence of fiscal-colonial tariff products in the conformation of 19th century European average tariffs and the negative correlation between tariffs and growth in the European Periphery.

These contributions share some apparently contradictory results which imply a double paradox. Firstly, protection seems to have slowed growth in the 20th century but not in the 19th century (see O´Rourke (2000) and Clements-Williamson (2002, 2004)). Secondly, during the late 19th century, economic growth seems to be positively associated with both openness and tariffs.[2] Other important questions emerging from these studies include the fact that the relationship between average tariffs and growth (significant or not significant, positive or negative) depends crucially on the countries included in the sample (see Dejong and Ripoll, 2006; Clements and Williamson (2002,

[1] This positive relation between tariffs and growth in Europe in the late 19th century has been sustained by many authors, including Milward –Saul (1977), Pollard (1982) but notably Bairoch (1976, 1989, 1996). For an extended discussion on the good reputation of late 19th century protectionism, see Tena (2006).

[2] See Edwards (1992, 1993, 1998), Vamvakidis (2002), Yanikkaya (2003). New models estimate the connexion between trade and growth using gravity equations as instrumental variables as used by Irwin and Tervio (2002), following the seminal work of Frankel and Romer (1999). Jacks (2006) has also recently detected a positive and significant effect of openness on growth, with even higher levels of elasticity than in most estimates for the twentieth century.

2004)) and on the time period under consideration (O´Rourke (2000), Clements and Williamson (2002, 2004) and Jacks (2006)). Furthermore, the simplicity of average tariffs makes it impossible to move closer towards the establishment of a causal mechanism to explain the relation between tariffs and growth.

As De Long (1995) and Irwin (2001a) emphasised for the late 19th century, the central question to investigate in the process of understanding the causal mechanism between tariffs and growth is that of how tariffs affected the process and direction of capital accumulation. Comparative advantage sectors are not usually protected, so a high tariff country which focuses protection in highly-skilled manufacturing industries will probably have higher rates of growth than if protection were focused on low-skilled manufacturing sectors. In marked contrast, we can observe that countries usually protect low-skilled industrial sectors more than highly skilled ones because governments fall prey to "rent seekers" who are more interested in barring foreign competitors than promoting growth by shielding growth-promoting industries during their infancy.

A key result of Grossman and Helpman's (1994, 2001) analysis of tariffs, externalities and endogenous growth is that tariff structure, as well as average tariffs, is an important part of trade policy. A country with high average tariffs would only have an opportunity to grow rapidly if tariffs are highest in high productivity sectors. The literature on endogenous protection has long recognized that a country's tariffs are an outcome of a political rent-seeking game mainly determined by the type of institutions developed in the country (Krueger (1974, 1999), Magee,-Brock and Young (1989), Trefler (1993), Grossman and Helpman (1994) and Magee (2002)).

In a very recent paper Nunn and Trefler (2006), following Grossman and Helpman's (1994) protection-for-sale model, develops a new approach to examine the causal mechanism between tariffs and long term growth for the late 20th century, introducing externalities into the model.[3] In the new model, tariffs affect future growth via externalities and these externalities vary across industries. High tariffs reduce welfare and probably growth if they are not distributed in favour of industries which generate positive externalities at an economy wide level. An empirical observation for the 19th and 20th centuries would show that in most countries a high industrial tariff average implied a tariff structure biased in favour of unskilled intensive industries with no pro-growth positive externalities. Only countries with developed institutions, able to put a lid on lobbying, will favour tariffs in skill-intensive industries against non-skill intensive industries. So, we assume that good institutions encourage politicians to be

[3] For the positive extenalities of some sector on general productivity see Antweiler- Trefler (2002), Irwin (1994).

closer to pro-growth policies and that the "skill-bias" of the tariff structure is an indicator of good institutions.[4]

This paper discusses some of the variables to influence the different effects of tariffs on growth depending on a country's institutional characteristics. This paper annalyses different clubs of countries, based on the level of development, trade tax dependence and political independence. On this basis we investigate the impact of tariffs on long term income per capita growth in the late 19th century. The next section presents an open view of the relevance of regional asymmetry and the country sample configuration for the tariff growth debate. Section 3 presents the intuitive model which relates the causal mechanism between tariff structure and growth, based on the skill industrial tariff bias. Section 4 presents the sources and the variables used in the new data base estimated for this study. Section 5 contrasts the evidence on skill-bias tariff structure, tariff average and institutional variables with the main hypothesis of the model. The last section looks at how, in general, the first results match the model predictions that countries with relatively higher tariffs grow more slowly, apparently because high tariff countries protected the non-skill intensive sectors more than skill intensive sectors. The provisional conclusion discusses the relevance of these findings and other alternative interpretations.

2.- Did Tariff Structure Explain the Regional Asymmetry in Tariff-Growth Relations?

The departure point of this study is the confirmation and discussion of the regionally asymmetrical relations between tariff average and growth discovered by Williamson et al. The tariff-growth relationship may be ambiguous because high tariffs in sectors with positive externalities may induce or tolerate high rates of growth. On the contrary, high tariffs in sectors with no positive externalities may induce low rates of growth. So regional asymmetry may, in part, be explained by the different tariff structures of countries. For the late 19th century, tariff structure is mainly influenced by income per capita, relative factor abundance and political independence. New Settler countries tended to impose high tariffs for reasons involving public finance and political economy. In terms of public finance, the taxation of foreign goods arriving into the nation's ports reduced the problem of tax compliance, especially for countries with low population densities. Other means of raising revenue (excise taxes, land taxes, income

[4] There are many Olsonian "collective action" arguments and national case estudies to support this argument (see Irwin (1994) and Magee – Brock-Young (1989), Federico -Tena (1999) and Tena (2005).

taxes and the like) simply may not have been as feasible or as easy to enforce in countries with a widely dispersed population, particularly in the late nineteenth century. In terms of political economy, if a majority of the population owns land (or if the government is controlled by landowners), they may have an interest in avoiding direct taxes on land in favour of high taxes on imported luxury goods.[5]

The other rich nations were mainly European countries with good institutions able to develop a more independent tariff policy with a low tariff average and probably a tariff structure biased towards the skill intensive industries. On the contrary, poor countries with colonial dependent political institutions, suffered a more exogenous determination of tariff policy which implied increased opportunities to "put a lid on lobbying" of local pressure groups and, consequently, lower pressure to increase tariffs or favour non-skilled industrial or non pro-growth sectors. On the contrary, tariff policy in poor, politically independent countries with a low balance of independence power and less democratic and transparent institutions would be easily captured in favour of non-skilled industrial sectors without pro-growth effect. [6]

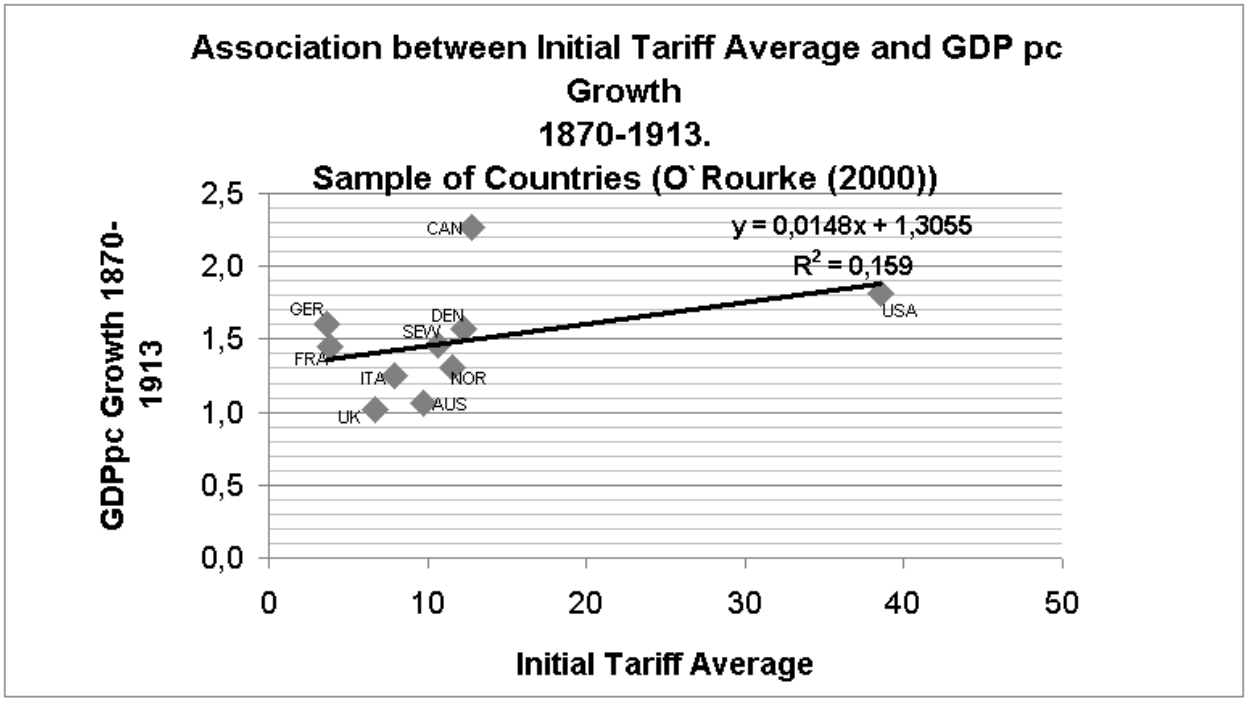
Consequently, the question of whether a significant relationship between initial tariff average and growth exists and whether this relationship is positive or negative depends critically on the countries included in the sample. The next section of this paper presents a new data base and a model of political economy based on the skill industrial bias of the industrial tariff structure of different groups of countries around the world. In this section we discuss our proposal that different tariff structures influence the regional asymmetry of the tariff growth relations presenting an ad-hoc simple association between the initial tariff average and growth in the late 19th century that finish in the First War World.

The initial tariff average is measured as customs receipts divided by the total value of imports for the years 1865-1875, and growth for 1870-1913, as usual, is in real terms 1990 International Geary-Khamis dollars offered in Maddison (2003). The world has been divided between rich and poor according to an arbitrary but explicit criteria in which the poor were those countries which, in 1870, had a Maddison GDPpc below half that of the richest country in the world (the United Kingdom) in the same year. Following previous discussion, a subdivision has been introduced for the rich, separating the land abundant countries from the rest (according to literature). At the same time, the poor countries have been divided according to their tariff policy

[5] See Irwin (2002.b) and Bertola-Williamson (2006).
[6] For an extension of this arguments to explain regional asymmetry see Williamson (2006).

independence (this criteria is adopted in line with Williamson (2006) and Bairoch (1976, 1989). As a consequence, this paper works with 4 geographical regions: eight *Rich European countries* (Austria, Belgium, Denmark, France; Germany, the Netherlands, Switzerland and the United Kingdom), six *Rich New Settlers* (Argentina, Australia, Canada, New Zealand, Uruguay and the USA), fourteen *Poor Independent* countries (Greece, Hungary, Italy, Norway, Portugal, Romania, Russia, Serbia, Spain, Sweden, Brazil, Cuba, Peru and Colombia), and ten *Poor Dependent* African and Asian countries (Burma, Ceylon, China, Egypt, India, Indonesia, Japan, the Philippines, Thailand and Turkey). In future regressions for tariff average only the countries for which we have also estimated industrial skill tariff will be used.[7]

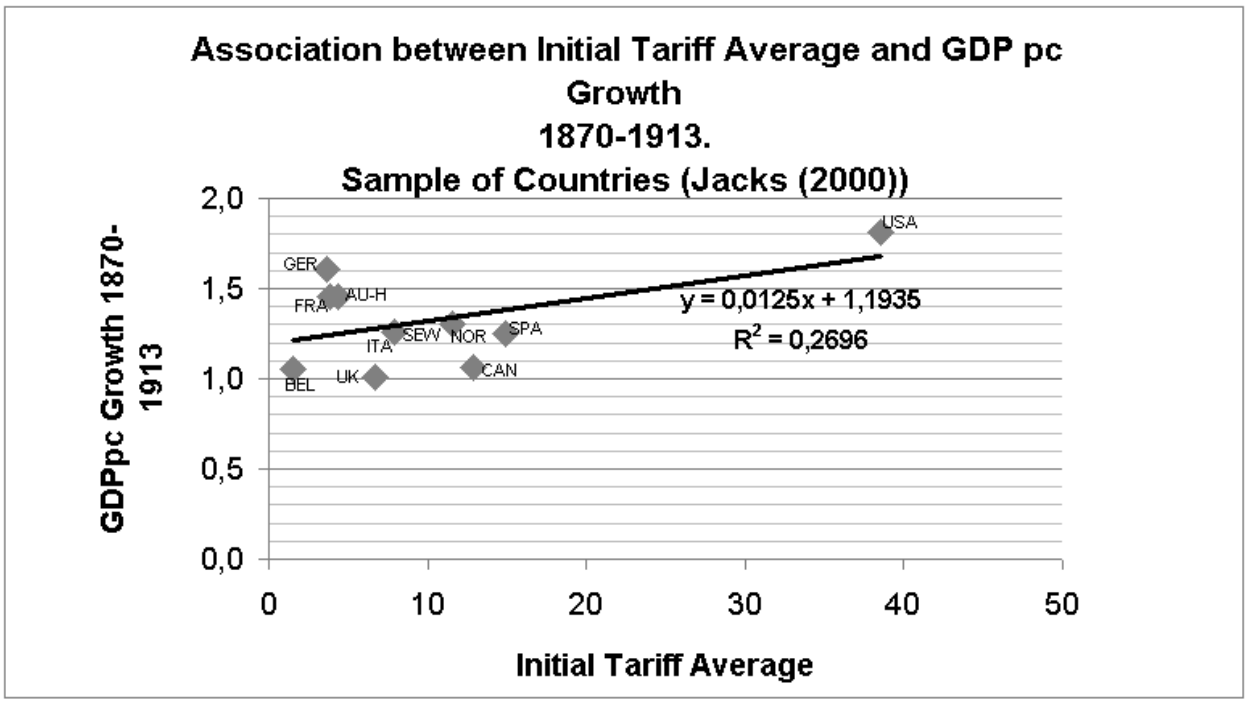
Figure 1



Sources: 1865-75NT and 7013GDPGR in Table 2, Appendix 2.

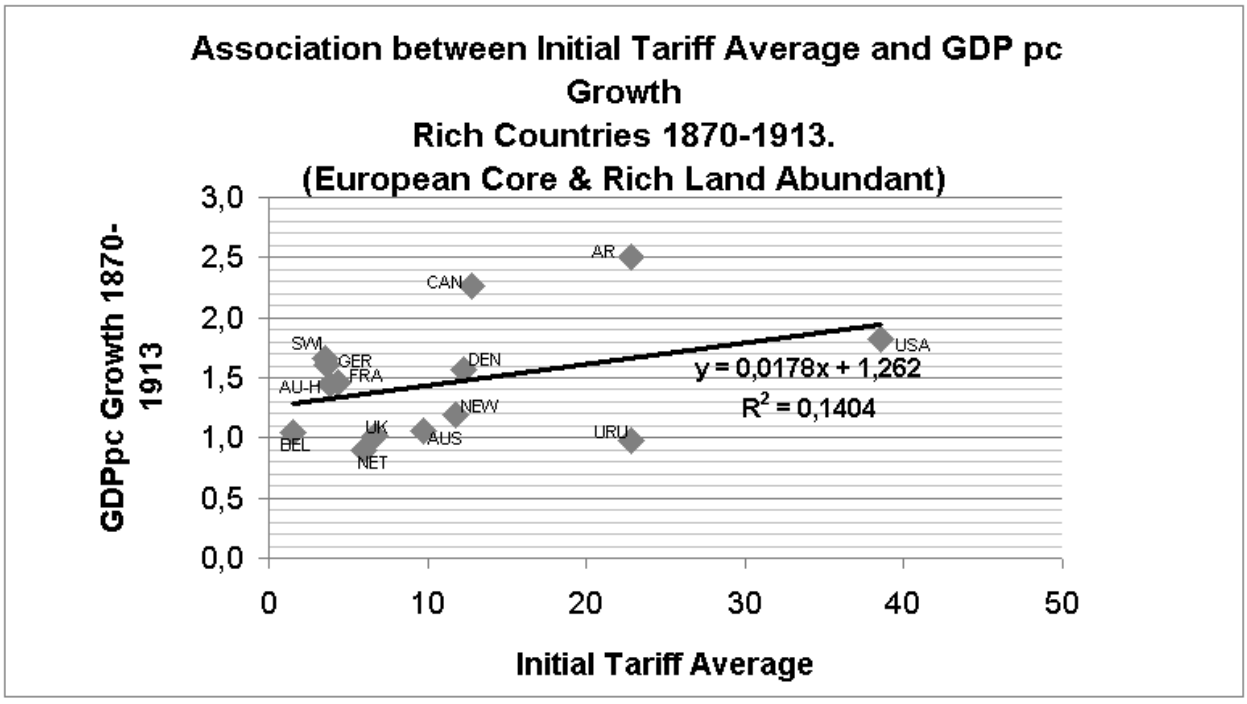
[7] Only one exception has been made. Argentina has been included in the group of rich new settlers (despite its GDPpc in 1870 is slightly below half UK GDPpc in the same year, according to Maddison (2003)). Because most literature considers Argentina a rich new settler that share similar caracteristics as an expansionist economy with strong imports of labour and capital and trade tax dependence. See O'Rourke -Williamson (1999), Irwin (2002 b).

Figure 2



Sources: 1865-75NT and 7013GDPGR in Table 2, Appendix 2.

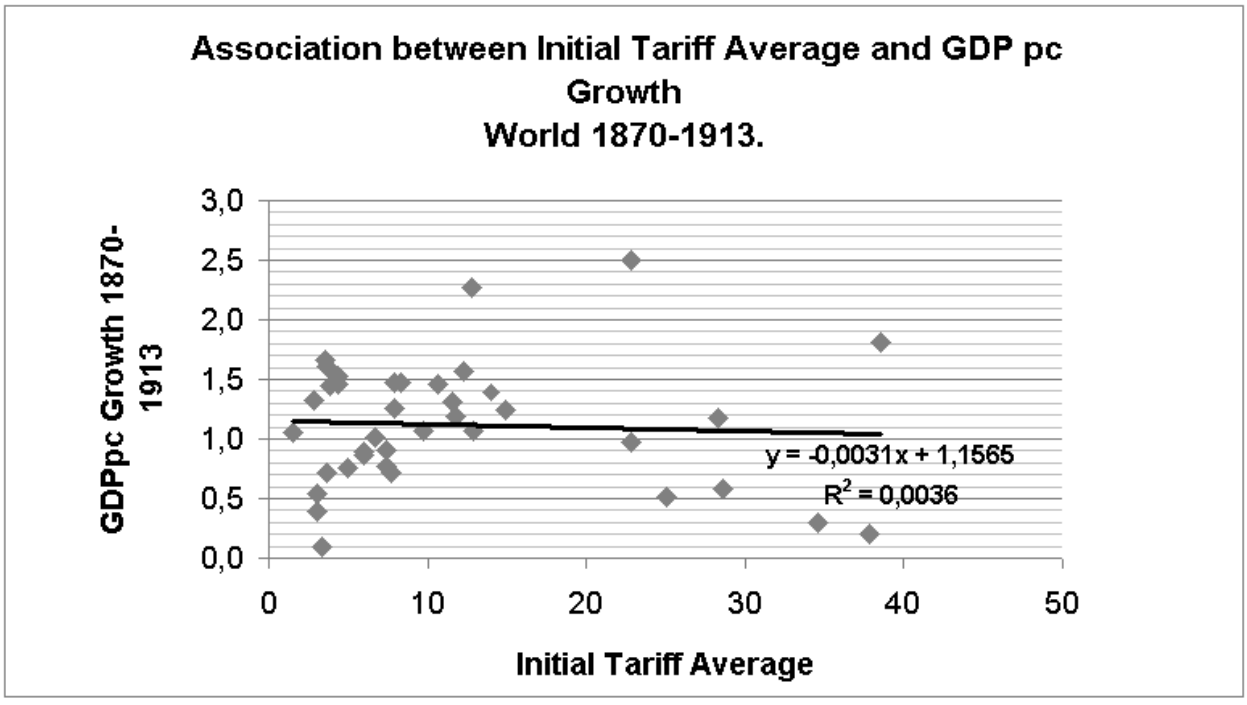
Figure 3



Sources: 1865-75NT and 7013GDPGR in Table 2, Appendix 2.

To contrast the regional asymmetry of tariff-growth relations we offer, in Figures 1 and 2, the association between the initial tariff average in 1865-1875 and real GDP per capita growth between 1870-1913 for the same group of countries used by O`Rourke (2000) - Australia, Canada, Denmark, France, Germany, Italy, Norway, Sweden, the United Kingdom and the United States - and Jacks (2006) – Austria-Hungary, Belgium, France, Germany, Italy, Norway, Russia, Spain, the United Kingdom and the United States). O`Rourke and Jacks' election of the country sample is apparently solely determined by the availability of historical data and has been criticised by several authors (see Irwin (2002a,b), Williamson (2006) and Tena (2006)). So, it is relevant to note that most of the countries included in the sample are rich European and land abundant countries. In fact the association between initial tariffs and growth of this group is very similar to that given by our more complete sample of rich, land abundant, European countries in Figure 3. In both cases the regression is strongly influenced by the tariff-growth data of the USA.

Figure 4

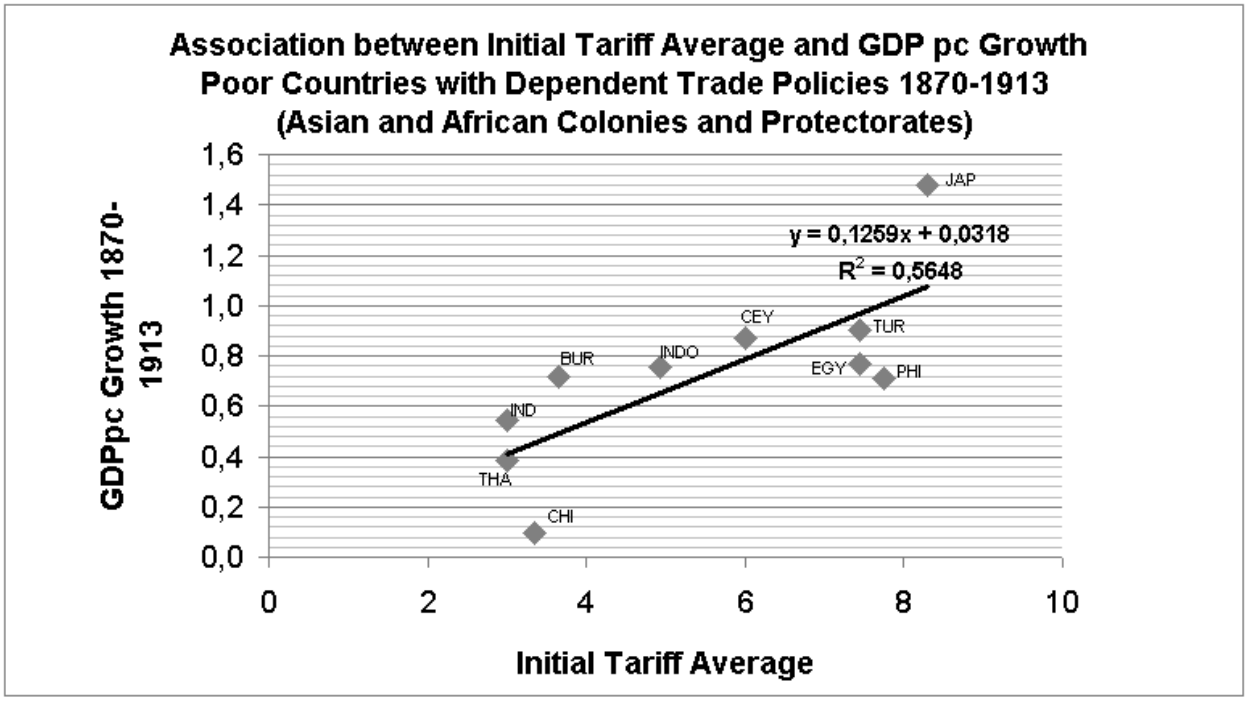


Sources: 1865-75NT and 7013GDPGR in Table 2, Appendix 2.

As Figure 4 shows, there is no positive or negative association between tariffs and growth for the whole sample of 38 world countries. A better representation of the world including rich and poor with dependent and independent countries provides a different picture of the tariff-growth relationship. The strategy of this paper is to accept

the existence of regional asymmetry, following Williamson et al. (2001, 2004, 2006), and propose an organization of world countries in clubs following the three explicit criteria mentioned in the introduction. Thus, the poor are divided according to their political independence, or in other words, their capacity to develop an independent commercial policy from the metropolis. This was an important issue for most Asian and African countries with the status of colonies or protectorates in the late 19th century[8].

Figure 5



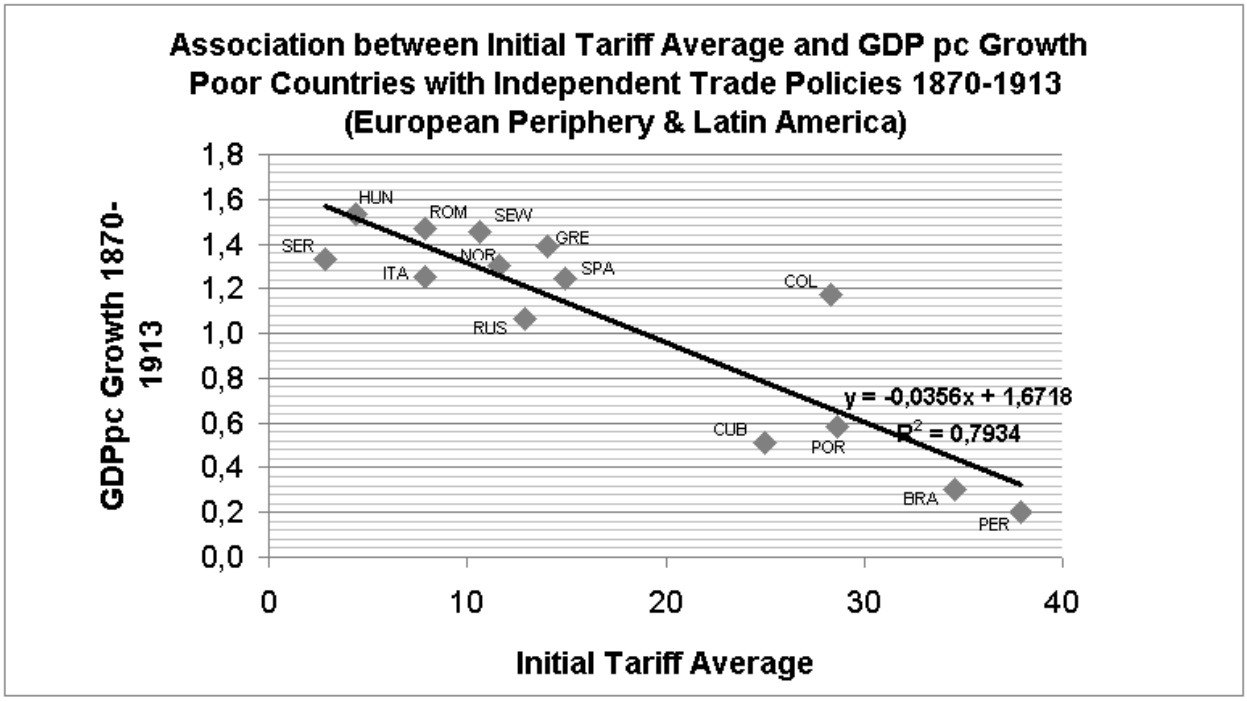
Sources: 1865-75NT and 7013GDPGR in Table 2, Appendix 2.

Figure 5 shows a more significant positive association between tariffs and growth for poor dependent countries. These Asian and African countries had a low tariff average level (between 3 and 8 per cent) because their tariff policies enjoyed very limited independence from the core European metropolis. This exogenous determination of their commercial policy made it possible to control local pressure groups who wanted higher tariffs and led to a more neutral incidence of tariffs on the assignment of resources.[9]

[8] Political autonomy and independence needs to be more accurately defined. The rich Commonwealth countries (Canada, Australia, New Zealand), the Latin American countries and the whole of Europe have been considered politically independent, following Williamson et al (2001, 2006).

[9] For a similar approximation for the African and Asian colonies see Williamson (2006) and Bairoch (1989, 1996).

Figure 6



Sources: 1865-75NT and 7013GDPGR in Table 2, Appendix 2.

On the contrary, in Figure 6, the relation between tariff average and growth appears consistently negative. Politically independent poor countries had commercial policies designed by their own governments and parliaments. The European Periphery and Latin America had high tariffs especially in traditional industrial sectors linked with technologies developed from the First Industrial Revolution such as textiles and metals. During the second half of the 19th century in many European Peripheral countries low-skill sectors had become well established and organized lobbies which demanded high tariffs to defend national industry from the competition of manufactured exports from the rich countries[10]. Peripheral governments were too weak to stop rent-seeking in the economy and most of them introduced high tariffs in low-skill sectors. These results would reflect both the existence of poor underlying institutions and the negative relations between protected low-skill sectors and growth.

[10] For Latin America protectionism see Coatsworth-Williamson (2004) and Bertola –Williamson (2006). For the European periphery see Federico-Tena (1998, 1999) and Tena (1999, 2006).

3.- The Causal Mechanism between Tariffs and Growth. Institutions and the Skill Bias of Tariff Structures.

Economic theory suggests that institutional differences should influence economic outcomes because they affect decisions about work, saving, investment, innovation, production, and exchange (see Greif (2006)). Econometric analyses tentatively suggest that this is the case (Hall and Jones (1999), Acemoglu, Johnson and Robinson (2001, 2002, 2006) and Rodrik-Subramanian and Trebbi (2002)). The literature on endogenous protection has long recognized that a country's tariffs are an outcome of a political rent-seeking game mainly determined by the type of institutions a country develops (Krueger (1974), Magee-Brock and Young (1989), Trefler (1993); Grossman and Helpman (1994, 2001)). In countries with good institutions, governments may care about the well being of their citizens and be strong enough to stop rent-seeking in the economy.

Following Nunn and Trefler (2006), this paper defends the hypothesis that a country with good institutions will tolerate higher tariffs in industries that generate positive externalities. These externalities would have to operate at an economy wide level coming either from economic or technological sources, rather than at industry level. This would imply that the relationship between tariff average and growth may be ambiguous because high tariffs in sectors with positive externalities may induce or tolerate high rates of growth. On the contrary, high tariffs in sectors with no positive externalities may induce low rates of growth. So, in theory, there is no reason to find a systematically unambiguous relationship between average tariffs and growth in different groups of countries.

In this section, following the traditions of the tariff-growth literature and especially Nunn-Trefler (2006), equation (8) expresses the dependent relationship between tariff average, tariff structure and quality of institutions with the average annual growth rate per capita GDP, $\ln Y_{C1} - / Y_{C0}$, where Y_{CT} is per capita GDP in country C in year t.

$$\ln Y_{C1} / Y_{C0} = \beta_0 Y_{C0} + \beta_E E\tau_{c0} + \beta_{SB} SBv\, \tau_{c0} + \mathbf{X}_{c0} \beta X + \varepsilon_c$$

In this equation we consider only long term growth so we take t = 0 to be the initial year (usually 1870-5) and t = 1, the final year (usually 1913). The dependent variable is $\ln Y_{C1} - / Y_{C0}$ (measured as the accumulated real GDP per capita growth rate).

Let $\beta_0 Y_{C0}$ be the initial GDPpc in the initial year used as the classical variable of control for convergence in this type of exercise.

Let $E\tau_{c0}$ be the tariff average in country c and initial year 0.

Let SBv τ_{c0} be the skill-bias of tariffs in country c in initial year 0 (usually 1870-5). This will be defined in our two measures of "75Corr-Skill" and "75Diff-skill".

We also introduce $\mathbf{X}_{c0}\ \beta X$ as country-specific variables related with the quality of institutions .

To construct the skill-bias index of the respective countries' tariff structure, Nunn and Trefler's (2006) procedures have also been used. The first proxy used is "75Corr-Skill", a correlation between skill and tariff rankings of the industrial sector of every country. Defined as the cross-industry correlation between skill intensity ranking constructed in Table 1 of the Appendix and the respective ad valorem tariffs of the same sectors estimated for every country for the year 1875. Most of the countries in our sample have a negative correlation sign between the skill and tariff ranking because tariffs are usually higher in non skill-intensive industries and lower in skill-intensive industries. The second proxy used is "75Diff-Skill" which is constructed choosing an arbitrary "cut-off" in the ranking of skill-intensive industries. This cut-off has been chosen in relation with the largest differences in sectors' skill intensity around the mid point of the ranking. The skill intensity ranking and the cut-off chosen is shown in Table 1 of the Appendix. The "75 Diff-Skill" is calculated as the difference between the simple average of the ad valorem tariffs of the respective skill-intensive sectors ("up cut-off") and the non skill-intensive sectors ("down cut off") for every country. In relation with the institutional variables, two types of index have been used: one that relates the level of democracy of a country POLITY2 (numeric) Range = -10 to 10 (-10 = high autocracy; 10 = high democracy) ; and another which measures the grade of independence of the executive government, XCONST (numeric): Executive Constraints: operational (de facto) independence of chief executive.

4.- New Data on Industrial Tariffs, Skill-Bias and Institutions

For 1870`s, with the exception of Bairoch (1989), there are no comparative studies by countries of industrial tariff levels. Bairoch (1989) offers a table of comparative industrial tariff averages in 1875 for 14 countries ("Author's computation based on tariff duties and prices for 14 different manufactured products" p.42). This study does not offer information on the manufactured items included or the method used (tariffs, prices and weights)**.** So, to develop the necessary quantitative variables on cross country industrial sector tariffs, a new panel of data has been constructed: firstly, on the

ad-valorem tariffs of 26 industrial products in 1875 for 32 countries based on British sources. Secondly, on the skill intensity of those industrial sectors, based on the general structure of USA industrial wages in 1890 (using secondary sources) and other sources of wages in 1885 Spain (from the USA Consular Reports).

The ad valorem tariff sources used in this estimation are from the study directed by Robert Giffen and presented to the House of Commons in 1877 and 1881. The data were developed by the *UK Statistical and Commercial Department Board of Trade*, with the title: "Import Duties on British Goods (Foreign Countries) and Rates of Duty (Foreign and Colonial) on British Manufactures or Produce". The data refer to prices and tariffs for 15-24 manufactured articles in 32 countries. This study has been complemented with other estimations on prices and duties for an additional 9 manufactured articles obtained from the Annual Statement of Trade (1876) and Board of Trade (1878) for a similar group of countries. This material provides us with a complete series of homogeneous data of the tariff average for around 26 industrial sectors in 32 countries (for sources, products and technique used see Appendix 2).

In the literature, relative skill intensity by sectors is estimated by using ratios of workers with more than 12 years of schooling between total. To our knowledge, data for the ratios of skilled workers by industrial sector for the late 19th century do not exist. The oldest data found is the UK census of 1951 which offers figures for skilled, semi-skilled and un-skilled blue-collar (male-female) and the number of white collar workers by sectors[11]. Skill intensity measures, apparently, are quite stable to temporal and geographical changes, but 75 years is too long to assume that we are dealing with the same sectors as in the 1870s. So in the absence of more recent data on skill volume by sectors, we have made the assumption that capital is uniformally distributed between sectors and sectors with relatively higher salaries are those with a higher proportion of skilled workers.[12] This means that we have used the skill premium by sectors to construct our ranking of skill intensity.[13]

The skill premium wages used in Table 1 of the Appendix came from two different sources (see sources in bottom table). In the first case, the complete wage structure of every sector makes it possible to estimate the "median" wage of the sector.

[11] See the recent paper by Beltran-Ferry&Pons (2007) which includes an estimation of skill intensity based on this data.

[12] This may produce errors in some circumstances because the temporal scarcity of some skills may offer high salaries independently of productivity. For this reason we prefer our broader measure of skill intensity represented by 75 diff-skill.

[13] Nunn and Trefler (2006) show how the use of alternative skill-intensity rankings at the same time as those of the USA (1972), South Africa (1997) and Brazil (1972) have no effected at all the final results of their correlation coefficient between skill intensity and growth.

In the second case, the information is extensive but not uniform for every sector, so we have constructed homogeneous professional samples by sector and used the wage promethium of every sector to estimate a skill premium ranking for the respective textile sectors.

In relation with the institutional variables, the level of democracy of a country, POLITY2 and the level of independence of the executive government, XCONST, the data came from the Policy IV data base. Polity IV contains coded annual information on regime and authority characteristics for all independent states (with a total population greater than 500,000) in the global state system and covers the years 1800-2004.

5. Evidence on tariffs and growth

So we have an extended and homogeneous tariff data base for around 16 industrial sectors for 32 countries in 1876. Data on the initial year of total tariff average, unweighted industrial tariff and the skill-bias of industrial tariffs, makes impossible to develop a model with panel data and fixed country effects. In addition, the reduced number of observations and potential problems of autocorrelation limited the simultaneous introduction of other control variables than the initial GDPpc, level of democracy or independence of the executive, in a single regression equation. For this reason a partial correlations strategy was employed, testing the comparative explicative power of the total tariff average, manufacture tariff and skill industrial tariff intensity respectively for long run growth between 1870-1913. Tables 2, 3 and 4 of Appendix 1 present this strategy for the world, the *rich countries* (with and without land abundant countries), and the *poor countries* (with and without colonial dependent countries).

Table 2 shows first results for the correlations between world tariff average and growth. As expected, the relation between tariff average and growth is only positive for the *rich country club.* The complete twenty eight country world sample does not show any significant correlation between tariffs and growth. The first significant correlation is found for the twenty-three country world sample, without the five New Settlers (that show a very low, but significant at one per cent, negative elasticity between tariff average and growth). The negative coefficients improve again in the case of the world sample of twenty countries without land abundant and the African and Asian dependent colonies. On the contrary, the complete sample of twelve rich countries, including land abundant countries, shows a very slightly positive coefficient in contrast with the slightly negative, but also significant at 1 per cent coefficient, found for the poor independent countries. So, in line with these findings, Table 2 shows that the influence of tariff average on growth at the end of the 19th century was negative rather than

positive for most countries and especially for the poor. It follows that first evidence contradicts Bairoch and O'Rourke's tariff-growth positive hypothesis, except in the case of the *rich countries club*.

In Table 3, the negative relation between manufacture tariffs and growth appears to be even stronger for the twenty-seven world, non land abundant rich countries. This relation, however, appears to be especially relevant for the world non land abundant with trade independent world countries, whose negative elasticity exceeds 2.4 points. Manufacture tariffs had a negative relation with growth in the case of the poor independent countries but not for the rich, which have a positive but non significant coefficient. Growth in the case of the rich countries is better explained by GDP convergence inside the club than by total or manufacture tariffs as shown by the negative GDPpc coefficient in 1870.

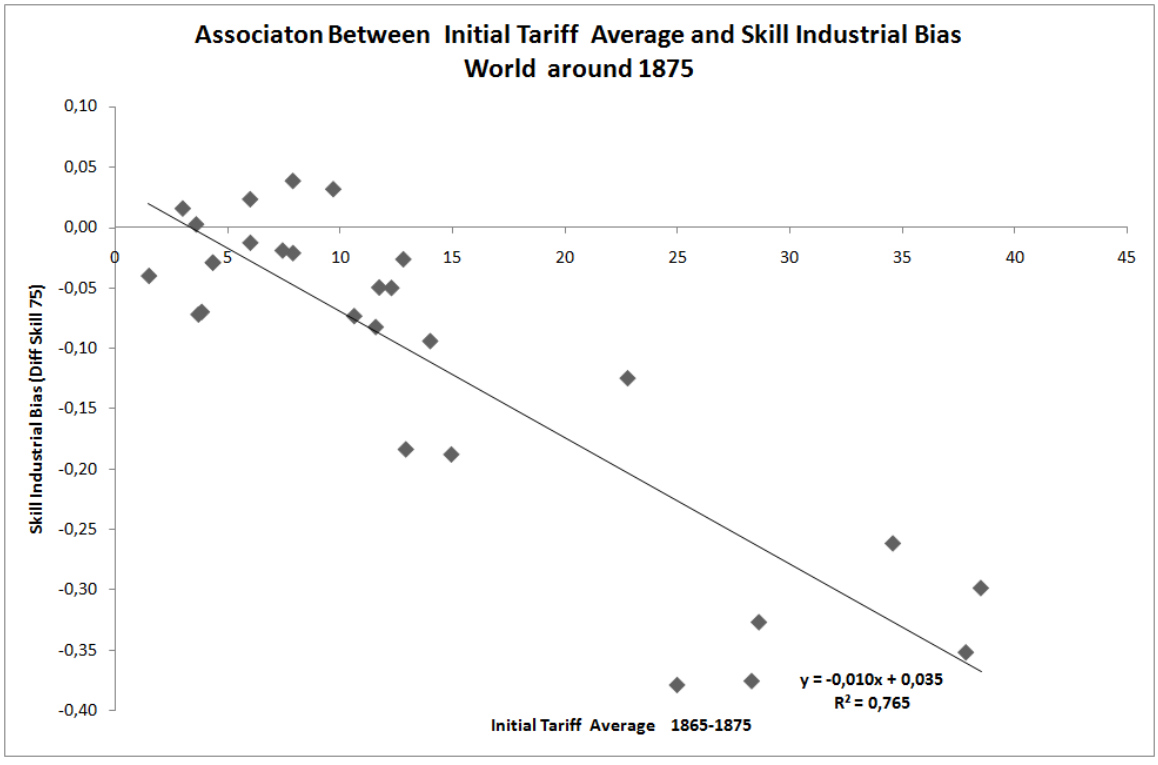
Tables 4 and 5 show the first correlations between the "skill intensive" protection bias and long run growth. Results confirm the general expectations that countries that protected the more skilled industrial sectors were those with the best growth performance. Table 4 presents only the 75Diff-Skill coefficients because results are better than for the alternative 75Corr-Skill. Correlations are, in general, good except for rich countries. Coefficients are especially high and significant for the world (without land abundant countries), and for the independent poor. This means that the world (without fiscal land abundant countries) and especially the poor independent countries, of the European periphery and Latin America, with a higher bias of the tariff structure for the skill intensive sectors were those with a better real GDP per capita performance. The exception would be the rich countries, with or without the land abundant countries, in which the skill bias protection does not explain fast or slow future growth. In general terms, it is proved that countries who provided more protection for the skill-intensive sectors grew faster than those that did not. The initial tariff skill-intensity bias explains the 1870-1913 growth much better than the initial tariff average, independently of income level. The initial tariff structure appears to be even more relevant for growth than the initial total tariff or Industrial average level.

It is assumed that institutions in poor countries, once independent institutions have been developed, are fragile and susceptible to manipulation by pressure groups. As a consequence it is probable that the political game results in high industrial tariffs in pretentious infant unskilled industrial sectors. Table 5 shows how poor countries with a stronger bias in favour of skill-protected industries and better institutions enjoyed better growth performance. Skill-bias explains growth to the same extent whether XCONST (which measures the larger chief executive independence) or POLITY2 (which

measures the democracy of countries) is used as a control variable. The results in Table 5 are important for our argument because variables representing good institutions do not show a significant positive elasticities coefficients with growth. This suggests that positive externalities of the general economy produced by the protected skill industrial sectors are mainly responsible for long run growth rather than the general effect of good institutions, also captured by the skill-bias (as may be assumed, see Figure 1 of Appendix 1).

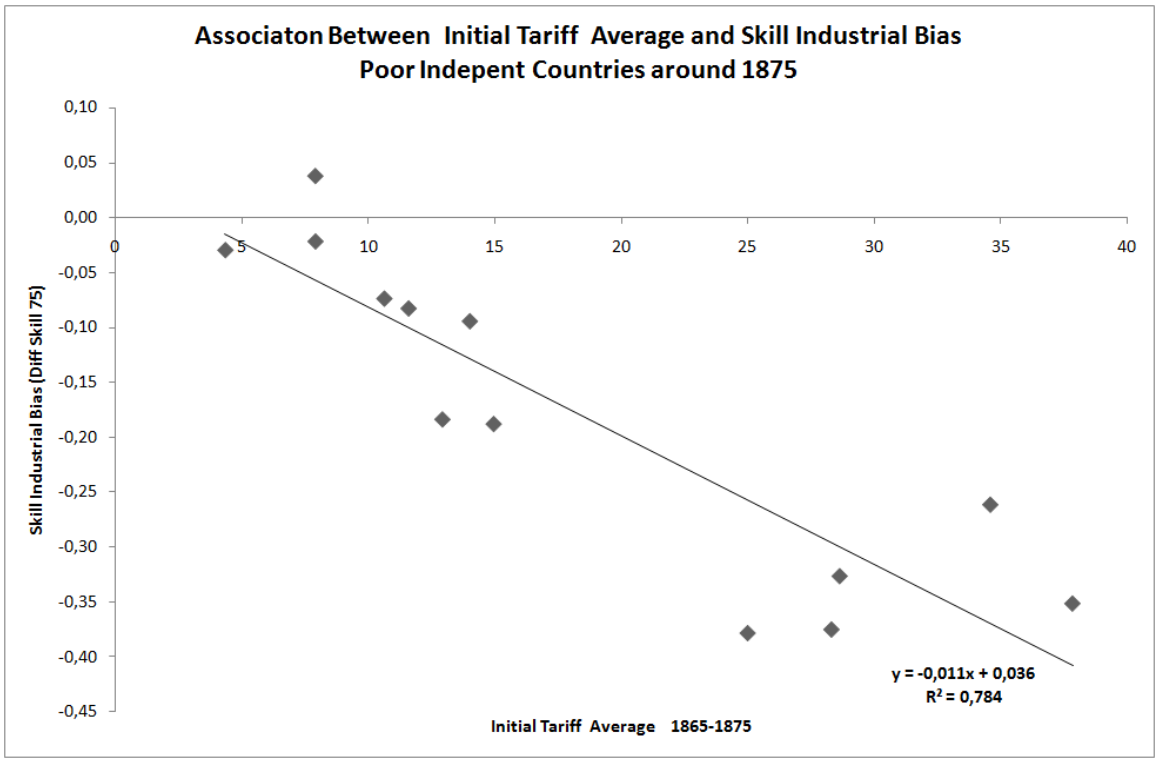
It was not possible to control for the initial industrial structure and this may be relevant if the unskilled bias in the tariff structure only represents the existence of a large unskilled industrial sector in poor countries which may be the real factor affecting future growth. In the absence of these data we assume, firstly, that initial industrial structure is controlled by initial GDPpc and the correlation is positive for the world sample, not only for the poor. In addition, the fact that Asian and African Colonies, with relatively large unskilled production sectors, had low tariffs and a positive correlation with growth (see Figure 4) would contradict this interpretation. Nevertheless, additional research should be carried out in this direction.

Figure 7



Sources: 1865-75NT and 75Diff Skil in Table 2, Appendix 2.

Figure 8



Sources: 1865-75NT and 75Diff Skil in Table 2, Appendix 2.

Figures 7, 8 and Table 6 show a negative strong correlation between the initial skill intensity bias protection (measured by 75Diff-Skill) coming from our data base and the Clements-Williamson initial tariff average.[14] This means that the countries which provided most protection for the unskilled sectors were those which imposed the higher tariff average. This relation is consistent for the world and especially for the poor, but not for the countries with more moderate protection such as the rich European countries. These countries had much lower total and industrial tariffs by one side, and on the other side a stronger influence of exotic high tariffs products on total tariff revenues than in the European peripheral countries (as was showed by Tena (2006)). On the contrary, the European periphery and Latin America had higher industrial tariffs and an industrial tariff structure biased to low skill sectors. This explains the lack of correlation between tariff average and the skill-bias tariff structure in rich European countries and the relevant inverse relation of both variables for the poor European periphery.[15]

[14] This negative correlation between tariff average and the tariff skill intensity bias has also been detected for the late twentieth century by Nunn and Trefler (2006).

[15] Products like tea, coffee, cocoa or sugar represented over 50% of total tariff revenue in countries like England and France in the 1870s; see Figure 6.5 in Tena (2006).

5. Conclusions

Previous sections revisits Bairoch's hypothesis that tariffs were positively associated with growth in the late 19th century, confirmed recently by a new generation of quantitative studies. This paper highlights the importance of the structure of protection in the relation between trade policy and its potential growth-promoting impact. Evidence is based in a new data base on industrial tariffs for the 1870`s. First results suggest that Bairoch's thesis on the positive tariff-growth relationship only applied to the "rich countries club". The initial point of this study is the confirmation and discussion of the regionally asymmetrical relations between tariff average and growth proposed by Williamson et al. This paper annalyse different clubs of countries, based on the level of development, trade tax dependence and political independence that determine different Institutions and tariff structure. So regional asymmetry is explained by the different tariff structures of countries. The tariff-growth relationship may be ambiguous because high tariffs in sectors with positive externalities may induce or tolerate high rates of growth. On the contrary, high tariffs in sectors with no positive externalities may induce low rates of growth.

We follow Grossman and Helpman's (1994) "protection for sale model" and the recent empirical application made by Nunn and Trefler (2006) for the late 20th century which assumes that good institutions succeed in controlling rent-seeking and bias Industrial tariff structure in favour of skill intensity pro-growth sectors. Standard measures of good institutions do not explain growth (only governments with stronger executive independence in the poor countries performed better than the rest) and this fact reinforces the hypothesis of the relevance of those institutions able to put a lid on lobbying for growth and exclude the possibility that the skill-bias of the protection structure is capturing the broader effect of bad institutions on growth in poor countries. In general terms, this paper proves that countries which provided more protection for the skill-intensive sectors grew faster than those that did not. The initial tariff skill-intensity bias provides a better causal mechanism explanation of the 1870-1913 growth than the initial tariff average, independently of income level.

Bairoch and O'Rourke are only partially right if the world is a "rich club" including New Settler countries which grew rapidly in the late 19th century. Leaving out rich land abundant countries, which protected mainly for fiscal reasons, the evidence would suggest that more protection, measured by total tariff average and manufacture average, implied more unskilled inefficient protection and less growth. This is especially true for the poor countries in the late 19th century.

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APPENDIX 1

Figure 1
Association Between Good Institutions and Industrial Skill Intensity Protection in the World Around 1870

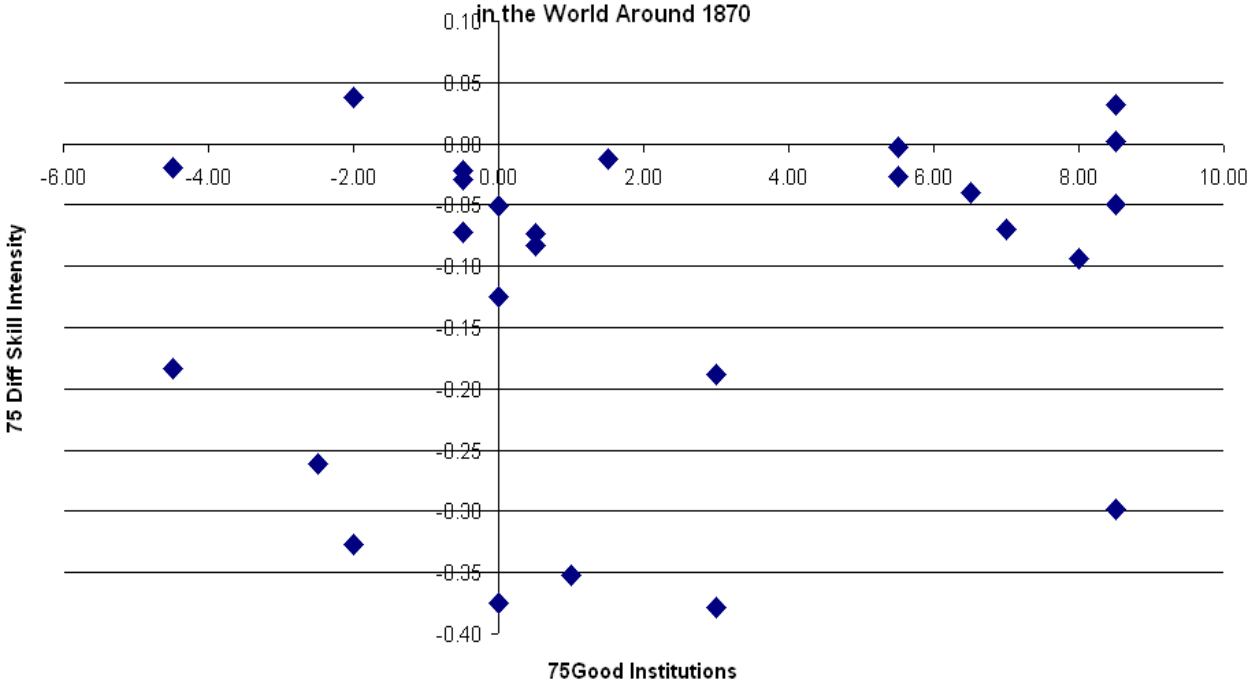

Table 1

SKILL INTENSITY Ranking

ranking	Description	skill intensity	
1	Ships	13,01	
2	Machinery hardware&c	12,65	
3	Paper Manufactures	11,65	
4	Silo throwns(9)	11,58	
5	Iron Steel Manufactures	11,29	
6	Leather and Manufactures	11,00	high cut-off
7	Copper lingots, Cakes, Slabs(15)	10,01	
8	Álcali Chemical products	9,64	
9	APPAREL	9,27	
10	Woollen & Worsted Manufactures	7,9	low cut off
11	Linen Manufactures	7,8	
12	Cotton Manufactures	7,74	
13	Jute Canvas and Sacking(11)	7,04	
14	Woollen yarns(stuffs all wool)(10)	6,2	
15	Linen Yarn (Lbs)	5,9	
16	Cotton yarns undyed	5,8	

Sources: The skill premium wages used in this table came from two different sources; firstly, from the wage distribution for male production workers in 12 manufacturing industrial sectors in 1890 in Iowa (covering the 165 largest cities) offered by Claudia Goldin and Frank Katz (1996, Appendix Table 1, p.46) and secondly, from patchy but abundant information on wage distribution in the textile sector (cotton, wool, hemp, jute and silk) in Barcelona in 1884 (included in Scheuch (1885)).

Table 2
Initial Tariff Average - Growth Regressions
(Unconditional model)

Sample of Countries with skill tariff data								
Dependent Variable Average Annual 1870-1913 Growth Growth rate of GDP *per capita*	**Sample 28 World Countries**	**Sample 23 World No Land Abundant**	**Sample 25 World Independ**	**Sample 20 World Independ No land Abundant**	**Sample 12 Rich**	**Sample 7 Rich No land Abund**	**Sample 16 Poor**	**Sample 13 Poor Independ**
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Constant	1.101 0.566	1.285 0.000	1.476 0.000	2.173 0.000	2.703 0.000	2.779 0.002	0.925 0.014	2.059 0.000***
1870 Real GDP per capita	0.0001 0.256	0.000 0.502	0.0000 0.866	-0.0028 0.023	-0.0062 0.000***	-0.0006 0.017***	0.0004 0.135	-0.0002 0.297
1865-1875 Tariff Average	0.049 0.735	-0.024 0.006***	-0.016 0.012**	-0.431 0.000***	0.021 0.008***	0.005 0.821	-0.0228 0.012**	-0.041 0.000**
Number of bóxer	28	23	25	20	12	7	16	13
Prob > F	0.2469	0.0036	0.2191	0.000***	0.000***	0.0392	0.0107**	0.000***
R-squared	0.1059	0.4353	0.1289	0.7550	0.8446	0.771	0.502	0.8347
Adj R-squared	0.0343	0.3437	0.0497	0.7262	0.8101	0.657	0.4258	0.8016

Note: P-values underlined
*** significant at 1%; **Significant at 5%; *Significant at 10%

Table 3
Unweighted Manufacture Tariff Average - Growth Regressions
(Unconditional model)

Sample of Countries with skill tariff data								
Dependent Variable Average Annual 1870-1913 Growth	**Sample 32 World**	**Sample 27 World No Land Abundant**	**Sample 25 World Independ**	**Sample 20 World Independ No land Abundant**	**Sample 13 Rich**	**Sample 7 Rich No land Abund**	**Sample 19 Poor**	**Sample 13 Poor Independ**
Growth rate of GDP *per capita*	**Countries**							
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Constant	0.868	0.823	1.476	1.821	2.226	3.721	0.441	1.526
	0.001	0.001	0.001	0.000	0.000	0.003	0.127	0.017*
1870 Real GDP per capita	0.0023	0.0028	0.0000	-0.0014	-0.004	-0.0009	0.0067	0.0003
	0.061	0.038	0.913	0.431	0.019**	0.009***	0.016	0.916
1875 Unweighted Manufacture Tariff Average	- 0.274	- 0.788	- 1.147	- 2.409	1.347	- 2.972	- 0.908	-0.041
	0.690	0.006***	0.174	0.006***	0.117	0.139	0.152	0.026**
Number of obser	32	27	25	20	13	7	19	13
Prob > F	0.1279	0.0231	0.2779	0.0079***	0.0203	0.0118	0.0271*	0.0411*
R-squared	0.1323	0.2695	0.1099	0.434	0.5412	0.8915	0.3631	0.4718
Adj R-squared	0.0724	0.2025	0.0290	0.3681	0.4495	0.8372	0.2834	0.3661

Note: P-values underlined

*** significant at 1%; **Significant at 5%; *Significant at 10%

Table 4
Initial Skill Tariff Bias (75 Diff - Skill) Growth Regressions
(Unconditional model)

Sample of Countries with skill tariff data								
Dependent Variable Average Annual 1870-1913 Growth	**Sample 32 World**	**Sample 27 World**	**Sample 25 World**	**Sample 20 World Independ**	**Sample 13 Rich**	**Sample 7 Rich**	**Sample 19 Poor**	**Sample 13 Poor**
Growth rate of GDP *per capita*	**Countries**	**No Land Abundant**	**Independ**	**No land Abundant**		**No land Abund**		**Independ**
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Constant	0.8965	0.7766	1.618	1.639	2.287	3.084	0.346	1.313
	0.000	0.000	0.000	0.000	0.000	0.002	0.173	0.006
1870 Real GDP per capita	0.0023	0.0002	- 0.0005	- 0.0009	-0.004	- 0.007	0.007	0.0001
	0.063	0.020**	0.739	0.498	0.015**	0.013**	0.007	0.651
Skill Bias of 1875 Tariff	- 0.274	0.677	2.068	2.644	-2.216	2.367	1.174	2.385
75 Diff-Skill	0.355	0.083*	0.023**	0.000***	0.087*	0.398	0.053*	0.004***
Number of obser	32	27	25	20	13	7	19	13
Prob > F	0.089*	0.010**	0.050**	0.000***	0.015**	0.027**	0.011**	0.007***
R-squared	0.153	0.314	0.238	0.573	0.564	0.835	0.428	0.623
Adj R-squared	0.095	0.257	0.169	0.523	0.476	0.754	0.357	0.547

Note: P-values underlined

*** significant at 1%; **Significant at 5%; *Significant at 10%

Table 5
Initial Skill Tariff Bias (75 Diff - Skill) Conditioned by Political Institutions (Polity 2)
Growth Regressions 1870-1913

Sample of Countries with skill tariff data								
Dependent Variable Average Annual 1870-1913 Growth	**Sample 28 World**	**Sample 23 World No Land Abundant**	**Sample 25 World Independ**	**Sample 20 World Independ No land Abundant**	**Sample 13 Rich**	**Sample 7Rich No land Abund**	**Sample 15 Poor**	**Sample 13 Poor Independ**
Growth rate of GDP *per capita*	**Countries**							
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Constant	1.444	1.282	1.841	1.723	2.310	3.069	0.855	1.378
	0.000	0.000	0.000	0.000	0.000	0.007	0.046	0.009
1870 Real GDP per capita	- 0.0001	0.0006	- 0.001	- 0.001	- 0.004	- 0.007	0.004	0.001
	0.921	0.663	0.378	0.368	0.029	0.026**	0.161	0.719
Skill Bias of 1875 Tariff	1.486	1.826	2.247	2.690	-2.179	2.031	1.759	2.441
75 Diff-Skill	0.068*	0.007***	0.016**	0.001***	0.112	0.501	0.024**	0.006***
75 POlITY2	0.019	0.015	0.0206	0.0110	0.004	0.008	0.014	0.010
	0.311	0.305	0.318	0.434	0.824	0.483	0.509	0.617
Number of obser	28	23	25	20	13	7	15	13
Prob > F	0.144	0.012	0.002	0.002	0.048	0.081	0.054	0.023
R-squared	0.197	0.426	0.274	0.590	0.566	0.864	0.485	0.847
Adj R-squared	0.096	0.335	0.171	0.513	0.422	0.729	0.345	0.796

Note: P-values underlined
*** significant at 1%; **Significant at 5%; *Significant at 10%

Table 6
Initial Tariff Average – Skill Protection
(Unconditional model)

Sample of Countries with skill tariff data									
Dependent Variable Initial Tariff Average 1865-1875	**Sample 28 World Countries**	**Sample 23 World No Land Abund**	**Sample 25 World Indepenđ**	**Sample 20 World Independent & No Land Abund**	**Sample 12 Rich**	**Sample 7 Rich Europe**	**Sample 9 Poor Europe**	**Sample 16 Poor**	**Sample 13 Poor Indepenđ**
Estimation	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Constant	5.561	9.956	5.373	12.433	-0.542	8.732	8.383	11.71	16.901
	0.065	0.002	0.187	0.006	0.943	0.522	0.175	0.013	0.017
1870 Real GDP per capita	0.0016	-0.033	0.002	-0.045	0.002	-0.001	-0.001	-0.005	-0.008
	0.913	0.044	0.904	0.042	0.514	0.760	0.744	0.172	0.092
75 Diff Skill	-73.20	-65.83	-73.62	-61.24	-109.34	4.56	-55.45	-66.58	-60.043
	0.000***	0.000***	0.000***	0.000***	0.001***	0.952	0.002***	0.000***	0.000***
Number of observ	28	23	25	20	12	7	9	16	13
Prob > F	0.000***	0.000***	0.000***	0.000***	0.000***	0.942	0.004***	0.000***	0.000***
R-squared	0.767	0.845	0.750	0.843	0.744	0.029	0.831	0.849	0.836
Adj R-squared	0.748	0.830	0.727	0.825	0.687	-0.456	0.774	0.826	0.804

Note: P-values underlined
*** significant at 1%; **Significant at 5%; *Significant at 10%

APPENDIX 2

ESTIMATION OF THE INDUSTRIAL TARIFF DATA BASE IN 1875

There are some well known contemporaneous estimations of comparative manufactures tariff averages by country before the First World War. The League of Nations (1927) offers comparative index numbers for more than a dozen of countries in 1913, but only Liepmann (1938) develops a complete disaggregated study by sector with an explicit methodology for the same year. Another relevant study, less commonly used by economic historians, is that of the Board of Trade (1903) which offers estimations of tariff averages in 20 countries for 32 manufactured articles.

For 1870`s, There is not a single systematic study who develops the necessary quantitative variables on cross country industrial sector tariffs. This study presents a new panel of data on the ad-valorem tariffs of 26 industrial products in 1875 for 32 countries based on British sources. The sources present the incidence of import tariffs on the principal manufactures exported from United Kingdom (the main world manufacturer exporter in 1875). This sources uses British fob export prices instead of national cif import prices in the denominator for the estimation of the ad valorem tariffs. On the one hand, this would imply an over bias of advalorem tariff average, but in the case of manufactured articles with low freight factors, practical implementation of fob instead of cif prices makes little difference to the final results.[16] On the other hand, especially for poor countries, British export values are closer to real market prices in frontier than the low accurate import unit values that most of the poor countries had in their respective official trade statistics around 1870.[17]

To obtain the sector tariff average was used the unweighted tariff of the articles belonging to the sector. In this way, it has been obtained a complete series of homogeneous data of the tariff average for 14-16 industrial sectors in 32 countries (for the sectors see Table 1 of Appendix 1, for the countries see Table 2, Appendix 2). This method (which is adopted below) has the advantage of applying a uniform standard to all countries, both as regards the list of articles on which the duties are calculated, and the relative "weight" attached to each article. The unweighted manufacture tariff by country assumes an artificial standard import demand structure for every country which has not been biased by tariffs.[18]

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[16] The League of Nations (1927) used cif import and fob export prices for the estimation of total tariff average and concluded that *" the results obtained under the two systems are in fair accordance , but those from method B (fob export prices) tend to be slightly higher (on the average circa 8 per cent)"*. p.6. In the case of the estimation of manufactures fob the accordance between the two systems is probably very close because manufacture freight factors are much lower than for primary products.

[17] For the accuracy of international foreign trade values see Federico- Tena (1991) and Tena (1992).

[18] The unweighted average was recommended by Loveday in his work on "tariff levels" for The League of Nations (1927) and was also supported by Liepman (1938). The League of Nations (1927) estimated a tariff manufacture unweighted average using 110 manufactured articles (excluding semi-manufactures). Liepman (1938) used the unweighted average of f.o.b. export prices for 144 products in which he used a separate index for semi-manufactures (44 articles) and manufactures (62 manufactured articles).

This technique involves, in the first place, making a list of the principal classes of goods and assigning a rough "weight" to each group according to its comparative importance in British exports. A few leading articles or classes of articles are then chosen from each group as representative of the whole group, and the average tariff rates of duty on these leading articles for each country are taken as fairly representative of the tariff treatment of the whole group. These tariffs should be expressed using the standard British monetary, capacity, mass or weight units for the corresponding articles (for special calculations see the technical specifications below points (a), (b) and (c) in Table 1 of this Appendix).

Sources:

Ad valorem rates, Import Duties and Prices of manufactures export in 1875:

The data on prices were presented with the respective tariffs by the UK Statistical and Commercial Department Board of Trade, with the title: "Imports Duties on British Goods (Foreign Countries) and Rates of Duty (Foreign and Colonial) on British Manufactures or Produce". And also in Import Duties on "British Goods (Foreign Countries) Return of the Estimated Average *ad valorem* Rate of Import Duty Levied in The Principal European Countries and in the United States, on certain Articles of British Produce or Manufacture" both in *British Parliamentary Papers vol. LXXVI.181. Session 1877*. This study has been complemented with other estimations on prices especially for textiles (for instance Cotton Manufactures and Woollen and Worsted Manufactures) but also for an additional 9 manufactured articles for the year 1876, from the "Annual Statement of Trade: Return of the Values of the Exports of British and Irish Produce 1854-1880". *British Parliamentary Papers vol. LXV; Session 1882*.
With this material a complete series of homogeneous data of the tariff average for 16-14 industrial sectors in 32 countries has been obtained (for the final sector aggregation see Table 1 of Appendix 1). This study was directed by Robert Giffen and presented to the House of Commons in 1877 and 1881.

Technical specification for some articles used for 1875,

(a) In the same way as for cotton piece goods, for cotton yarns 40 yards to the lb has been assumed (see British Parliamentary Papers (1905), p.291,).
(b) Cotton piece goods are entered in UK Trade Accounts by the yard whereas most duties are imposed by weight or graduated according to the weight per square metre of the tissues. An "average account" of 5 yards to the lb has been assumed. See British Parliamentary Papers (1905), p.291.
(c) In the case of Woollen and Worsted Piece Goods average weights have been estimated varying from 18ozs to the yard for heavy broad woollen piece goods and worsted coatings to 5ozs to the yard for Mixed Worsted Stuffs. See British Parliamentary Papers (1905) p.291.
(d) Equivalence for measurement of Mass or Weight: 1 Ton= 20CWT ; 1CWT= 112Lb = 50,8Kg; 100yard = 20Lb;1onz = 1/16 Lb; 1 lb= 0,453Kg.
(e) Official equivalence for monetary units: 1 Pound = 20 shillings = 240d; 1 shilling = 12d.

Database disposal to researchers under request.

Table 1

Groups, articles and prices taken as representatives of British manufacture exports 1876

Group	Representative Articles	Value of British Exports Of these groups of Manufactures in 1876 (Thousand Pounds)	Average export Values of these Articles 1876
1	2	4	5
Cotton yarns (a)		12782	
	1. Cotton single unbleached		9d/Lb
	2. Cotton single undyed		20d/Lb
	3. Cotton double undyed		23d/Lb
Cotton Manufactures (b)			
	4. Cotton piece bleached	31454	1988,08 d/Cwt (d)
	5. Cotton piece printed	18494	2661,93 d/Cwt (d)
Woollen &Worsted Yarn	6. Woollen and worsted yarn undyed	4417	60d/Lb
Woollen&Worsted Manufact©	7. Woollen stuffs all wool	18603	4594,35d/Cw (d)
Linen Yarn (Lbs)		1450	
	8. Linen yarns unbleached		20d/Lb
	9. Linen yarns single		26d/Lb
	10. Linen yarns double		46d/Lb
Silk (Thrown)	11. Silk Thrown	1081	800d/Lb
Jute Manufactures			
	12. Jute Canvas and Sacking	1212	4d/Lb
Iron and Steel Manufactures			
	13. Pig Iron	2842	1200d/Ton
	14. Bars &Angle	17382	1680d/Ton
	15. Rails including steel rails	10225	1680d/Ton
Machinery Hardware &c			
	16. Textil Machinary(l/Ton)	1383.059	2,45 lb/Cwt
	17. Locomotive Machinary(l/Ton)	556.058	2,25lb/Cwt
	18. Sewing Machinary(l/Ton)	518.329	6,75lb/Cwt
Copper Manufactures			
	19. Copper lingots, Cakes, Slabs	983	19200d/Ton
Leather and related Manufactures		2945	
	20. Ox & Cow Hides		26d/lb
	21. Calf Skins		46d/lb
Alkaly Chemical products		2223	
	22. Bicarbonate Soda		228d/Cwt
	23. Soda caustic		280d/Cwt
	24. Crystals of Soda		82d/Cwt
Paper Manufactures		1020	
	25. Paper for writing		6d/Lb
	26. Paper for printing		4d/Lb

APPENDIX 2

Table 2

COUNTRY	1865-75NT	70GDPpc	13GPPpc	7013GDPGR	75NTMAN	75UNTMAN	75Dif Skil	75Corr Skill	75POLT2	75XCONS	75INST	DumSkill	DumReg	DumRich	DumInd	DumRourk
AU	4.34	1862.59	3465.49	1.45	0.22	0.14	-0.03	-0.08	-4.00	3.00	-0.50	1	1	2	1	
BEL	1.50	2691.52	4219.54	1.05	0.08	0.06	-0.04	-0.36	6.00	7.00	6.50	1	1	2	1	
DEN	12.29	2003.18	3912.17	1.57	0.15	0.10	-0.05	-0.14	-3.00	3.00	0.00	1	1	2	1	1
FRA	3.85	1875.65	3484.77	1.45	0.21	0.15	-0.07	-0.23	7.00	7.00	7.00	1	1	2	1	1
GER	3.70	1839.08	3648.01	1.61	0.13	0.09	-0.07	-0.25	-4.00	3.00	-0.50	1	1	2	1	1
NET	6.01	2756.79	4048.51	0.90	0.02	0.01	-0.01	-0.10	-3.00	6.00	1.50	1	1	2	1	
SWI	3.60	2102.07	4265.79	1.66	0.03	0.05	0.00	0.10	10.00	7.00	8.50	1	1	2	1	
UK	6.74	3190.43	4920.55	1.01	0.01	0.01			3.00	7.00	5.00	0	1	2	1	1
AR	22.80	1310.63	3797.24	2.50	0.17	0.18	-0.13	-0.40	-3.00	3.00	0.00	1	2	2	1	
AUS	9.70	3273.24	5156.81	1.06	0.06	0.06	0.03	0.24	10.00	7.00	8.50	1	2	2	1	1
CAN	12.82	1694.53	4446.77	2.27	0.10	0.12	-0.03	-0.17	4.00	7.00	5.50	1	2	2	1	1
NEW	11.75	3099.66	5152.41	1.19	0.06	0.07	-0.05	-0.68	10.00	7.00	8.50	1	2	2	1	
USA	38.51	2444.62	5300.73	1.82	0.61	0.52	-0.30	-0.60	10.00	7.00	8.50	1	2	2	1	1
URU	22.80	2180.76	3310.11	0.98					-3.00	1.00	-1.00	0	2	2	1	
GRE	14.01	879.96	1591.71	1.39	0.11	0.13	-0.09	-0.51	9.00	7.00	8.00	1	3	1	1	
HUN	4.34	1091.60	2097.87	1.53	0.22	0.14	-0.03	-0.08	-4.00	3.00	-0.50	1	3	1	1	
ITA	7.91	1499.35	2563.55	1.26	0.15	0.10	-0.02	-0.14	-4.00	3.00	-0.50	1	3	1	1	1
NOR	11.59	1432.28	2500.61	1.30	0.11	0.05	-0.08	-0.33	-4.00	5.00	0.50	1	3	1	1	1
POR	28.64	975.04	1250.33	0.58	0.30	0.36	-0.33	-0.53	-7.00	3.00	-2.00	1	3	1	1	
ROM	7.90	931.04	1741.04	1.47	0.05	0.07	0.04	0.34	-7.00	3.00	-2.00	1	3	1	1	
RUS	12.93	943.32	1487.60	1.06	0.63	0.40	-0.18	-0.19	-10.00	1.00	-4.50	1	3	1	1	
SPA	14.95	1207.09	2055.62	1.25	0.50	0.35	-0.19	-0.46	-1.00	7.00	3.00	1	3	1	1	
SWE	10.63	1661.55	3096.07	1.46	0.15	0.09	-0.07	-0.30	-4.00	5.00	0.50	1	3	1	1	1
SER	2.80	599.01	1056.95	1.33								0	3	1	1	
BRA	34.60	712.97	810.99	0.30	0.37	0.34	-0.26	-0.70	-6.00	1.00	-2.50	1	4	1	1	
CUB	25.00	1568.00	1955.00	0.51	0.57	0.37	-0.38	-0.39	3.00	3.00	3.00	1	4	1	1	
PER	37.85	749.00	817.00	0.20	0.25	0.37	-0.35	-0.65	-1.00	3.00	1.00	1	4	1	1	
COL	28.32	749.00	1235.85	1.17	0.29	0.41	-0.38	-0.69	-3.00	3.00	0.00	1	4	1	1	
SOU		857.87	1601.98	1.46	0.08	0.09	0.00	-0.51	4.00	7.00	5.50	1	5	2	0	
IND	3.00	533.13	672.51	0.54	0.03	0.03	0.02	0.36				1	5	1	0	
JAP	8.30	737.38	1386.69	1.48					1.00	7.00	4.00	0	5	1	0	
TUR	7.45	825.00	1213.00	0.90	0.08	0.06	-0.02	-0.49	-10.00	1.00	-4.50	1	5	1	0	
PHI	7.75	776.02	1052.54	0.71								0	5	1	0	
JAM		535.07	608.12	0.30	0.10	0.13	0.00	-0.20				1	5	1	0	
THA	3.00	712.03	840.60	0.39								0	5	1	0	
BUR	3.65	503.89	685.14	0.72								0	5	1	0	
CEY	6.00	851.40	1234.25	0.87	0.04	0.04	0.02	0.21				1	5	1	0	
CHI	3.34	530.00	552.10	0.10					-6.00	1.00	-2.50	0	5	1	0	
EGY	7.45	648.74	902.00	0.77								0	5	1	0	
INDO	4.93	654.48	904.23	0.75								0	5	1	0	
MAR		563.03	710.23	0.54	0.06	0.09	0.02	-0.04	−6	1		1	5	1	0	
TUN		632.65	883.00	0.78	0.05	0.07	0.01	-0.04				1	5	1	0	

Recognition of Variables used in Table 2

1865-75NT	Tariff Average of the years from 1865 to 1875. Most of them from Clements-Williamson Data base.
70GDPpc	Maddison (2003) 1870 Real Per Capita Gross Domestic Product.
13GPPpc	Maddison (2003) 1870 Real Per Capita Gross Domestic Product.
7013GDPGR	Accumulated rate of growth between 1870 and 1913.
75NTMAN	Advalorem Tariff of 1875 most of them from Clements-Williamson Database.
75UNTMAN	Unweigted Industrial Tariff Average from Data Base Appendix 2.
75Dif Skil	75 Diff-Skill" is calculated as the difference between the simple average of the ad valorem tariffs of the respective skill-intensive sectors ("up cut-off") and the non skill-intensive sectors ("down cut off") for every country.
75Corr Skill	75Corr-Skill", a correlation between skill and tariff rankings of the industrial sector of every country.
75POLT2	POLITY2 (numeric) Range = -10 to 10 (-10 = high autocracy; 10 = high democracy) in 1875.
75XCONS	XCONST (numeric): Executive Constraints: operational (de facto) independence of chief executive in 1875.
75INST	An average of 75XPOL2 and 75XCONS.
DumSkill	Dummy Countries with data on 75 Dif Skill = 1.
DumReg	Dummy Regions: Rich Europe 1; Rich Land Abundant =2; Poor Europe=3; Poor Latin America=4; Colonies= 5.
DumRich	Dummy Rich: countries with GDPpc bigger than half UK in 1870 =2; the others=1.
DumInd	Dummy Independence: independent trade policy=1; the others=0.
DumRourk	Dummy O`Rourke: countries sample used by O`Rourke (2000)=1.